# Consciousness Awakening and Technology Enabling - A Case Study of Self-Supporting of Persons with Visual Impairments in Inclusive Higher Education[1]

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## Abstract

This case study investigates the experience of students with visual impairments in pursuing equality in inclusive higher education in China through the assistance of technology. It analyzes the development of higher education for persons with disabilities from segregation to inclusion, addresses attitudinal and environmental barriers to the equal participation of persons with disabilities, and shows the impact of local organizations of persons with disabilities on promoting equal rights in inclusive education through professional support and strategic advocacy work. Through an in-depth case study of a student with visual impairment who underwent college and graduate studies, the study's results indicate her problem-solving approaches to overcome barriers to independent living, academic achievements, and full inclusion in social activities. This study reveals the urgent need to develop systematic disability support in higher education institutes to promote equal participation in inclusive education.

*Keywords:* Inclusive higher education, students with visual impairments, disability awareness, accessibility, organizations of persons with disabilities

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On June 30, 2022, Jiangbo Liang, an applicant with visual impairments, received an admission letter from the Graduate School of Tsinghua University. This news attracted extensive media coverage. Many media outlets used headlines such as “25 Years of Perseverance,” “25 Years of Pursuit,” and “A Dream of Tsinghua University Becoming True” to honor the long journey undertaken by a person with visual impairments to be accepted by a regular university. However, these statements also drew awareness to the rights of persons with visual impairments to higher inclusive education. Coincidentally, Jiangbo was born in 1985, the prime year that people with disabilities in China were institutionally allowed to receive higher education due to the *Notice on College Enrollment and Graduation Assignment of Disabled Youth*, issued by the PRC Ministry of Education and other government agencies in February 1985. This policy stipulates that “if all candidates possess the same moral and intellectual conditions, they should not be denied admission solely because of disability.”

A focal point of the news reports on Jiangbo’s admission to Tsinghua University was the accessible format of testing he had taken. Some reported that “a computer-based test that employed a screen-reading software speaks 20 times faster than the normal speaking rate” (Jing, 2022). This description of testing technology drew newfound attention to the additional barriers that students with visual impairments must navigate throughout their university admission processes and their completion of college.

Moreover, reports on Jiangbo’s testing software speaking “20 times faster” than normal sparked another round of discussion among persons with visual impairments. To facilitate understanding, some college students with visual impairments produced an audio-

containing speech 20 times faster than normal. Only static electricity could be heard in this audio; nobody with visual impairments could actually understand it. Apparently, the reporting on the testing technology was not factual, which raised a new concern. Though exaggerations like these contribute to an image of the visually impaired "having superpowers," they confuse practice and interaction of persons with visual impairments with technology in higher education. Moreover, they obscure discussions on—and potentially hinder—the construction and development of inclusive education support systems.

This case study is based on the long-term professional as well as experiential background of the authors. The principal author has visual impairments and has been a leader of a representative organization of persons with disabilities for more than a decade. To promote disability human rights in China, he has collaborated with different sectors, especially academia, to support students with visual impairments in inclusive higher education since 2015. Furthermore, based on their accumulated practical experience, the authors are deeply aware of the importance of transferring individual cases of support to system-wide constructions for all students with disabilities in higher education settings. This case study is conducted for this purpose.

This study addresses the following questions: 1) How do students with visual impairments utilize information technology to foster accessibility and inclusion in higher education? What are the challenges? 2) How do universities, students with visual impairments, and organizations of persons with disabilities interact in inclusive higher education institutions? What are the implications of such interaction for promoting inclusive higher education?

## Historical Background and Current Conditions of the Development of Higher Education for Persons with Visual Impairments in China

### Restrictions and Rejection Persons with Visual Impairments Experiences in General Colleges and Universities (1949–1987)

Research indicates a general but elucidating picture of the history of higher education and its impact on persons with disabilities before 1977:

> For a long time after the founding of the People's Republic of China, the government policies for persons with disabilities mainly inclined to the living care of the injured soldiers in war. Educational policies emphasized on elementary education and increasing the enrolment rate of children with disabilities. Coupled with the destruction of the entire higher education system due to the Cultural Revolution, prior to the 1980s, the government had neither issued a special policy on higher education for persons with disabilities nor had it made corresponding education statistics on the disability category. The education at different levels was of low quality, and most persons with disabilities were excluded from the education system. (Li & Fu, 2015)

In September 1977, China reinstituted the national college entrance examination, which had been suspended for ten years. Higher education was considered exclusive to the elite, open only to a small percentage of students through a merit-based admission system including an annual examination. Meanwhile, correspondent system construction was underway. However, the physical examination system became an obstacle for persons with disabilities to pursue college and university admission. The 1979 *Standards and Implementation Rules of Physical Examination for College Attendance (1979 Rules, hereafter)* became the basis of the physical examination system for college admissions. The core of the *1979 Rules* was to list health conditions for rejection and restricted candidates

from selecting specific majors based on the results of a physical examination conducted after admission. Restricting rules dominated the policy. For example, in addition to rules for rejecting people with certain infectious diseases, there were very strict rules for rejecting students with visual impairments, involving the following ineligibility provisions:

> 20. Persons who have been diagnosed with glaucoma are ineligible for college attendance (glaucoma patients who have been asymptomatic for over two years after surgical treatment, with normal intraocular pressure, and visual acuity or corrected visual acuity of at least 1.0 in each eye are eligible for admission). Persons with congenital or traumatic cataract, whose visual acuity per eye or corrected visual acuity is above 1.0, are eligible for admission.
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> 21. Persons with diagnosed retinal and optic nerve diseases affecting vision (whose binocular visual acuity is less than 0.7) are ineligible for admission.
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> 23. Persons with a combined corrected visual acuity of less than 0.8 in both eyes are ineligible for admission (including persons with one eye blind and the other eye's corrected visual acuity less than 0.8).

The *Standards and Implementation Rules of Physical Examination for College Attendance* in 1980 refined these rules and specified the circumstances under which a person may be ineligible for college enrollment or not be admitted to a particular major. Although the standards for visual impairment have since been adjusted, eligibility guidelines on the annual admission examination have yet to be eased. Consequently, there are still various barriers for persons with visual impairments to attend colleges and universities. For instance, Article 5 stipulates that "persons with visual acuity of less than 0.8 per eye are ineligible for any major in the arts, such as film, theater, or vocal music".

This physical examination standard for college attendance actually excluded all

visually impaired persons. According to the *Standards and Implementation Rules of Physical Examination for College Attendance*, launched in 1979 and 1980, even the lowest level of visual acuity is far higher than the mildest level of low vision (Level 2) in China's visual impairment assessment standards. According to the visual impairment standard in the first national sample survey of disabled persons in China in 1986, second-degree low vision is "best corrected visual acuity of the good eye equal to or better than 0.1 and less than 0.3." According to the visual impairment standard of colleges and universities in the same period, "if the sum of the corrected visual acuity of both eyes is lower than 0.8, the candidate cannot be admitted." Even in 1985, the admissions physical examination standard was only slightly reduced to "if the sum of the corrected visual acuity of both eyes is lower than 1.0, the candidate cannot be admitted," which still disqualifies most visually impaired people.

Policy improvements began to loosen restriction for persons with physical disabilities. For example, on February 25, 1985, the Ministry of Education and other government agencies issued the *Notice on College Enrollment and Graduation Assignment of Disabled Youth*, stipulating that the relevant education and labor departments "should not deny admission of disabled youth solely because of their disabilities," and "the disabled candidates enrolled by colleges and universities should be assigned jobs by the state according to their majors after graduation." In the *Notice*, however, "the disabled candidates" clearly refers to "those with physical disabilities (without further deterioration), who can take care of themselves and whose disabilities do not affect the study in their enrolled majors and the work they will do after graduation." Candidates with visual impairment were still ineligible for higher education. These restrictions persisted until the establishment of the College of Special Education at Changchun University in 1987.

**Formation of the Separate Exam and Admission System as a Dominant Alternative (1987–)**

At a time when general higher education was not opening its doors to most persons with disabilities, Changchun University's decision to establish colleges and universities specifically for disabled persons was monumental. The College of Special Education of Changchun University became the first institution in China to admit students with visual impairments in 1987 after eight years of preparation. Bolin Gan, a member of the China Association for Persons with Visual and Hearing Impairments National Committee, spearheaded this institution. During a prior study tour in Yugoslavia, Bolin Gan found that "all blind and deaf people in Yugoslavia are required to receive education. In contrast, the Deaf and the Blind in China do not have a university, and they even have no junior college" (Tian, 2014).

However, Gan's pursuit of disability equal education sought to establish a separate university specifically designed for persons with disabilities. His efforts greatly shaped China's higher education for visual impairments towards the pathway of establishing separate exams and admission systems for a long period of history. Nevertheless, although Changchun University became a comprehensive general university and its College of Special Education now comprises one part of its campus, education through the College was, and has remained, isolated. For instance, its range of majors is limited to subjects such as acupuncture and massage, rehabilitation therapy, music performance, and piano tuning; furthermore, its teaching and living accommodations are all located separately.

It is worth mentioning that, beginning in 1986, the idea of placing students with special needs into regular classrooms received attention due to the global influence of integrated education and the need to increase the enrollment rate of students with special

needs in China (Zhang & Yang, 2018).

Meanwhile, in 1987, Bailun Xu, the founder of the *Journal of China Children with Visual Impairments Literature*, who also happened to have visual impairments, began collaborating with the local government to explore how to provide basic education to children with visual impairments by placing them in regular classrooms. To achieve this goal, he used the platform of the Golden Key Education Research Center for Visual Impairments to mobilize funding, human resources, ideas, and technology (Lv, 2017).

Therefore, the initial development of education for the visually impaired was driven by key persons with visual impairments. They endured, however, the Separate Examination and Admission System of high education (Dankao Danzhao 单考单招, the Separate System) since its formation. Horizontally, there have been schools that have retained the Separate System policies for visually impaired persons: the Special Education College of Beijing Union University and the School of Special Education of Binzhou Medical University, for example, have set up the Separate System programs for the visually impaired. In addition, schools, including the Guangzhou University of Chinese Medicine and the Shandong Vocational College of Special Education, have also opened junior colleges – specializing in acupuncture, massage, and music – for the visually impaired. Vertically, some universities also apply the Separate System policies to their graduate programs based on undergraduate education. For instance, in September 2014, Beijing Union University was approved to develop a special master's degree program in Clinical Medicine (Traditional Chinese Medicine, TCM), becoming the first special master's program for persons with visual impairments in China.

**Sporadic Practice of Inclusive Education under the Separate System (2002–)**

Since the turn of the 21st century, a few higher inclusive education practices have emerged in China, despite enrollment still being conducted through the Separate system. For example, in 2002, Shanghai allowed students with visual impairments who graduated from Shanghai Schools for the Blind to learn in regular classrooms at Shanghai Normal University through the separate process. Later, East China Normal University and Shanghai Second Polytechnic University also began to accept students with disabilities and offered majors, including special education, English, and social studies to students with disabilities who were permanent residents in Shanghai according to the household registration system in China. Moreover, since 2005, the College of Special Education of Changchun University has explored a second minor program for students with disabilities and opened three minor programs, such as Special Education in 2005, English in 2008, and Chinese Language and Literature in 2012 (Changchun University, 2021). In 2016, Nanjing Normal University of Special Education also made a breakthrough by introducing a major in the Department of Applied Psychology for students with visual impairments through the Separate System (Nanjing Normal University of Special Education, 2016). Ultimately, these sporadic practices laid the foundation for promoting inclusive higher education for persons with visual impairments, as discussed in the following section.

**The Development of Inclusive Higher Education for Persons with Visual Impairments and Parallel System between Special Education and General Education (2014–)**

China's inclusive higher education remains a parallel system between the Separate System and regular college entrance examinations, with the Separate system still playing a dominant role.

China ratified the UN Convention on the Rights of Persons with Disabilities (CRPD) in 2008. During the negotiation process of CRPD, China revised its 1990 Law on the Protection of Disabled People (LPDP). The revised law entered into force in July 2008. Article 7 on Barrier-Free Environment states "where visually impaired persons take various entrance examinations, occupational qualification examinations and appointment examinations held by the state, Braille or electronic examination papers shall be provided to them, or special workers shall be arranged to offer assistance." The 2012 Regulations on the Construction of Accessible Environment Article 3 reinstates this provision. On paper, the laws have removed barriers for persons with disabilities to take the Gaokao for regular higher education. In reality, before 2014, although many students with visual impairments had the opportunity to participate in the regular college entrance examination, they encountered challenges in the support system for testing and admission. Thanks to the joint efforts of policymakers, experts, and different groups of people with disabilities, students with visual impairments could apply for reasonable accommodations for taking the regular college entrance examination beginning in 2014. As a result, a limited number of students with visual impairments took the regular college entrance examination and entered general universities (Han, 2016).

Two specific policies contributed to this advancement towards inclusive higher education. The first is the national policy, *the Plan for Promoting Special Education (2014-2016)*. The paragraph concerning higher education states that higher education should "create conditions to actively enroll candidates with disabilities who meet the admission criteria, not to deny them on the basis of their disabilities; and provide assistance for people with disabilities to receive adult higher education" (General Office of the State Council, 2014). The second one is the *2014 Regulations on the Enrollment of Students to General Higher*

*Education Institutes* issued by the Ministry of Education in March 2014. It mentioned that "examination authorities at all levels should facilitate equal registration for examinations for persons with disabilities. For example, when a blind person takes part in the examination, the blind examinee should be provided with braille test papers, electronic test papers or special assistance from staff" (Ministry of Education, 2014).

These policies paved the way for people with disabilities to take the Gaokao with needed reasonable accommodations. Among them, Jinsheng Li, a blind man from Henan Province, got his first braille test paper for the national college entrance examination. Similarly, Yaodong Zhang, a candidate from Gansu Province, used large-print papers to take the college entrance examination and was admitted by the Hubei University of Chinese Medicine—becoming the first student with visual impairments to pass the college entrance examination and to be admitted by a general university. Thus, this year marked the "Prime Year of the College Entrance Examination for Blind People" (Lin, 2014). In celebration of this historical advancement, an organization of persons with disabilities (DPO) initiated the "selection and evaluation of top 10 disability rights events in China and pointed out: "the effects of and gaps between the 2018 LPDP and the 2014 MoE Policy (OnePlusOne, 2014). This social, political, and legislative context in China is a necessary background for this article. There is a dire need to explore different pragmatic and effective pathways beyond law analysis for equal participation of persons with disabilities in promoting inclusive higher education through analyzing the practice of inclusive higher education for persons with visual impairments.

In 2015, the Ministry of Education and China Persons with Disabilities' Federation promulgated the *Administrative Regulations on the National Unified College Examination for Persons with Disabilities (Provisional)* and, after two years of trial implementation, finalized

the *Administrative Regulations on the National Unified College Examination for Persons with Disabilities* in 2017. It also published three annexes, including the *Practical Operational Points of National Unified College Examination for Persons with Disabilities*, the *Application Form for Reasonable Accommodation for Persons with Disabilities to Apply for the ×××× National Unified College Examination (Sample Form),* and *Provincial (District and City) Notice of Application for Reasonable Accommodation for Disabled Candidates to Participate in the ×××× National Unified College Examination (Sample Form).* These documents provide practical and specific instructions for reasonable accommodations for people with disabilities, including those with visual impairments, to take the national college entrance examination (Ministry of Education & China Disabled Persons' Federation, 2017).

Reasonable accommodations for the visually impaired candidates covered in these documents include, among other things, “braille test papers, large-print test papers (including large-print answer cards), or regular test papers for candidates with visual disabilities”; “blind writing pens, braille writing tablets, braille drawing instruments, rubber mats, braille typewriters without storage, electronic vision aids without storage, blind canes, desk lamps, optical magnifiers, and other assistive devices or equipment necessary for answering questions”; a 50% extension of testing time for “specified for the subject; candidates with special difficulties in writing, such as visually impaired candidates using large-character test paper or ordinary test paper”; and a 30% extension of testing time for candidates whose “upper limbs cannot write normally due to cerebral palsy or other diseases, and candidates without upper limbs based on the total exam time specified for the subject.”

Despite this progress, electronic test papers necessary for some students with visual impairments were not included (Wang, 2014). Furthermore, although accommodations for the college entrance examination underwent improvements, the number of students with

visual impairment who have applied for braille exam paper in the CEE since the first implementation of reasonable accommodation in 2014 is very minimal compared to the total number of students taking the CEE in the same year (Hu, 2022, p. 97).

Moreover, many visually impaired candidates still lack the confidence in taking examinations and requesting accommodations due to the fundamental inadequacy of basic education. Moreover, factors such as limited selection of areas of study and employment opportunities, weak transitional policies for inclusive education at different levels, and negative traditional attitudes toward disability also contributed to the lack of participation in the examination (Cai, 2018).

This restricted acceptance of students with disabilities in colleges and universities, a limited offering of majors and programs, and inadequate preparation within colleges and universities continue to hinder the advancement and quality of inclusive higher education for students with disabilities (Lei et al., 2017). Consequently, despite the ease of the regular college entrance examination, higher education for persons with disabilities is still dominated by the Dankao Danzhao system. The regular college entrance examination is not an option for most persons with visual impairments. However, the parallel system of special education and general education in higher education has undergone an imbalanced development and persisted. Thus, achieving quality, inclusive higher education remains a challenge.

Therefore, this article aims to analyze the enduring efforts and achievements of pioneers of inclusive higher education in an environment with a limited support system to respond to two urgent challenges: the first challenge is to meet the critical needs of persons with disabilities for support to take the Gaokao; the second need is to introduce the views of persons with visual impairments into the research of system construction for inclusive higher education. The article aims to contribute to efforts to close the gaps between the promises in

law and policy and the reality of meaningful, inclusive higher education.

## Literature Review

Support systems for providing reasonable accommodations to students with visual impairment in universities vary worldwide. For example, based on a longitudinal study in the United Kingdom, researchers proposed a framework of support to facilitate learning environment to enable students with visual impairments through the "notion of progressive and mutual accommodations" to address challenges of support (Hewett, Douglas, Mclinden, at el., 2020, p. 754). Some study in Australia indicates that learning environments in higher education remain focused on adjustments at the individual levels with inadequate efforts to remove attitudinal and organizational barriers (Collins, Azmat, & Rentschler, 2019). Other studies rightly emphasize the importance of transitional programs to prepare students with disabilities for inclusive higher education (Morina, 2017; Getzel & Thomas, 2008). A study in Thailand through interviewing a group of blind students reveal the issues of inaccessible campuses, awareness issues of teachers, and inconsistencies in policies (Bualar, 2017). Despite the wide range of studies on students with visual impairments, Wang & Takeda (2022) point out that there have been inadequate ones on support services in China and further suggest that learning contents, methods, and purposes form the three principles for supporting the academic lives of students with disabilities. Given the unique context we discussed above, there needs to be appropriate ways to explore the development of a support system for disability-inclusive higher education in China.

When policies on the participation of persons with disabilities in the general college entrance examination were issued in 2015, there was no practical experience to follow in China on how to support the participation of persons with visual impairments and their integration into campus life on an equal basis. Therefore, in 2016, six universities in China,

including Changchun University, Beijing Union University, Wuhan University of Technology, Sichuan University, Nanjing Normal University of Special Education, and Zhengzhou University of Technology, were selected to carry out pilot work on inclusive higher education for students with disabilities. Among them, Changchun University, Beijing Union University, and the Zhengzhou University of Technology had previous experience in Dankao Danzhao and separate college running; the Wuhan University of Technology and Sichuan University had experience enrolling students with disabilities for inclusion in their programs; Nanjing Normal University had both features. However, a closer review of research on relevant topics finds few results related to inclusive higher education for persons with visual impairments.

By analyzing the working texts of the China Disabled Persons' Federation and the Ministry of Education in six domestic universities piloting higher inclusive education for people with disabilities, scholars found that "the pilot universities have made progress in admission, support for academic study, campus life and support for transition into employment. However, they face challenges in many other aspects, including establishing the enrollment process, meeting the special needs of students with disabilities, constructing inclusive campuses, and forming transitional service systems" (Zhang et al., 2020). In terms of school support services, "at present, much of the research on inclusive higher education in China focuses on the accessibility of the physical environment. Many studies have pointed out the problems in public spaces such as outdoor roads, surrounding areas of buildings, and leisure places in colleges and universities, as well as indoor learning places such as classrooms and libraries. However, the problems are mostly raised from the principle of the barrier-free design itself – that is, without consideration of users' feelings and thoughts – and lack the perspective of students with disabilities on problem-solving in a learning

environment still full of barriers. Moreover, the existing studies pay limited attention to indoor living places, such as constructing barrier-free environments in dormitories" (Wang & Zhang, 2017).

More importantly, there is a considerable lack of research on developing an inclusive culture in school environments. It has been pointed out that "awareness raising of inclusive education is still an urgent issue to be addressed" (Zhang, 2015). Other studies, based on the experience of students with disabilities, have pointed out that in an "inclusive" environment, college students with disabilities face many difficulties and challenges due to the lack of special education support and services at all levels (Wang, 2019). Students with disabilities are not passive objects but active subjects. More research is needed from the perspective of students with disabilities in coping with these challenges.

Other studies have paid attention to information accessibility in online courses for college students with visual impairments (Cai, 2020). These studies pointed out the impact of differences in technology application on the academic performance of students with visual impairments; they found that these students engage in technology empowerment and overcome barriers in online learning through mutual support in their community and raised the issue of inadequate awareness and support for these students in developing their technological skills. However, these studies have not linked such issues to developing higher education to explore the comprehensive application of information technology and the positive action of students with disabilities.

It is worth noting, however, that some studies emphasize the role of systematic support of university libraries for students with visual impairments and proposed "promoting the improvement and development of the support service for students with visual impairments in Chinese university libraries from the systematic, institutional, environmental,

resource and emotional dimensions" (Yuan, 2019). Overall, few studies have examined how organizations of people with disabilities and college students with disabilities can, collectively and individually, use existing technologies and resources to break barriers to meaningful, inclusive practices, and increase disability rights awareness in general.

In August 2015, One Plus One Disability Group, a civil society organization of people with disabilities, held its first workshop on "Support Services for Inclusive Higher Education for Persons with Visual Impairments." The workshop brought together experts and scholars in visual impairment education in China, college students with visual impairments who had been admitted to college via regular college entrance examinations, and staff from the admissions offices of various colleges (One Plus One Group of Disability, 2015). The workshop explored ways to support the equal participation and campus integration of students with visual impairments to promote the construction of systematic support.

Subsequently, in conjunction with public welfare foundations, professional colleges, and institutions, One Plus One established training sessions on disability rights awareness for schools and admitted students with visual impairments, campus adaptation assessment and training protocols, career planning consultations, and support for reasonable accommodations and accessible materials production. In addition, its signature program, the "Golden Cane Pre-College Program for the Visually Impaired," has had positive impacts by motivating researchers to make schools an inclusive, as opposed to isolated, environment for visually impaired students (Wang et al., 2020). However, beyond One Plus One's intensive support, topics focused on college students with visual impairments and practices of self-empowerment have not yet received attention.

This article aims to fill that gap. On the one hand, it hopes to address the lack of research on accommodation support for students with visual impairments in higher inclusive

education and – on the other hand – provide guidance on how to empower visually impaired college students to participate in and integrate into campus life fully. A support system for students with visual impairments in higher education is still under development in China. This research can also shed light on how to empower students with visual impairments to pursue success on campus during this transitional time of encountering barriers and the typical role DPOs in achieving this outcome.

## Research Methodology and Design

### Rationale for the Research

According to Feng (2022), to generate initial investigation on a specific issue is the main goal and strategy of such case study as well as the significance of methodology. This is a case study through which the authors attempt to explore in-depth of the experience of a student with visual impairments in inclusive higher education, her challenges, strategies of problem solving, and support she receives. Its goal is to focus on the specific and typical case in order to gain an in-depth and concrete understanding of the lived experience of students with visual impairments in inclusive higher education and reveal contextual barriers for prompting future research inquires and attention to the issue under discussion.

According to Scott (2014), a deep exploration and thick description of small-scale social life can be utilized to generate broader cultural interpretations (p. 760). This case study fits right into this category in the context where limited number of students with visual impairments can make their way into general higher education only in the past decade. As the implementation of the new *2023 PRC Law on the Construction of Accessible Environment* is under discussion on the ground, how this law protects the rights of persons with disabilities in inclusive higher education is an important topic in the field. There is tremendous value and

urgency to understand the experience of these students in their universities through "craftwork" (Yin, 2014, p. 28) of case studies.

**Data Collection**

A semi-structured interview method was used in this study. The interview mainly focused on the challenges facing persons with visual impairments, problem-solving methods, and factors affecting the choice of methods in general higher education. Questions were adjusted or expanded flexibly according to the interviewees' answers. The recordings were transcribed after the interviews. The participant reviewed the transcribed data. Data analysis was carried out with the help of interviewer.

Participant/Interviewee Q, a student with visual impairments, was selected as the participant for this case study. Q is a female second-year graduate student with congenital visual impairment. She is currently diagnosed with "Visual Disability - Level 1," with tubular vision and residual vision. She is unable to read with her vision and can travel independently. She enrolled in a local school for the Blind at eight, then moved to another school for the Blind in the provincial capital city. After graduating from junior high school, she enrolled in a school for the Blind in a city outside her province. In her senior year of high school, she passed the Dankao Danzhao system and enrolled in a university's inclusion program after graduating from high school. In her senior year in college, she took the national postgraduate examination and was admitted to a corresponding major in another general university.

Q has experience studying at schools for the Blind, having entered a general university for undergraduate studies through the Dankao Danzhao system and a general school for graduate studies through a national examination. Her undergraduate university is one of the six pilot universities of inclusive education in China and had already begun

accepting students with visual impairments the year before Q was admitted. Q was not the only student with visual impairment in the same department. However, she is the first and only student with visual impairments in the university for her graduate program. Her experience at both institutions has differed; her ability is constantly increasing as she gradually moves into a general education environment. As a graduate student, she is more active in seeking support and more mature in her strategies. As a result of her undergraduate experiences, she can better deal with the interaction with the graduate campus environment and develop transferable strategies. At the same time, Q has been in contact with organizations of people with disabilities since she started her undergraduate studies – having participated in training and received support – which has increased her understanding of the impact and role of such organizations.

**Data Analysis**

Currently, there exist no inclusive higher education resource centers or disability offices for students with disabilities in universities in China. Therefore, students with disabilities need to seek support from their universities or social resources. Q divides the core challenges faced by college students with visual impairments into three categories: independent living, academics achievements, and full inclusion in extracurricular life and activities.

***Independent Living***

To Q, pursuing independent living is also a journey of awareness-raising both for herself and her environment through her rigorous advocacy and active participation. A problem-solving attitude and approach turn to focus on solutions rather than problems. In the global history of independent living, disability rights movement activists began in the United

States in the 1970s, when a group of college students with physical disabilities faced a challenging campus and community environment and advocated for rights in equal participation. The social model of disability emphasizes the removal of environmental barriers and the provision of appropriate support to ensure the equal rights of persons with disabilities, which is consistent with the concept of independent living and has become an essential theoretical basis for the latter (Dejong, 1979, as cited in Marinelli & Orto, 1984, p. 43). From the concept of independent living and integration into the community in the Article 19 of the *UN Convention on the Rights of Persons with Disabilities (CRPD, hereafter)*, the protection and promotion of the fundamental rights of persons with disabilities in education, employment, and health should be based on "living independently and being included in the community" (Liu, 2014).

Q participated in disability rights awareness raising training held by One Plus One Disability Group. She noted, "I think that the most useful thing was the disability rights awareness-raising training because it helped me understand my rights and encouraged me to always fight for it." Q has always been pursuing independence. She is sensitive to barriers that hinder her independence and has also developed strategies for action to eliminate them.

***Mobility Independence***

Q often experienced "overprotection" from the university and volunteers assigned to her during her undergraduate study. For example, her activities outside the dormitory area were required to be always chaperoned by students without disabilities. "They arranged for students to take turns to accompany us. It was fine in the dormitory, but we couldn't go outside without them." This system was designed by an upper-class student who served as Q's deputy head teacher. "We fought for [the system's removal], but our efforts were futile.

The university only listened to the head teacher and the deputy head teacher. Understandably, they worried about our safety and the consequences they might bear." This problem was not solved until Q observed a training session on the *CRPD* held in the reading room when she was studying there.

She and several of her classmates with visual impairments actively sought help from One Plus One, the training session's organizer. After several negotiations, One Plus One acted as a third party to provide an assessment report and support plan for students with visual impairments. One Plus One then held a training camp – the Golden Cane Pre-College Program for the Visually Impaired – for college students with visual impairments at their university to hone their independent mobility skills. Students without disabilities were involved throughout the training to improve their understanding of the capacity of those with visual impairments.

The impact of the support plan and training allowed Q to gain the freedom to navigate around independently. During her graduate studies, Q prepared a needs form to communicate with the university before her entrance, emphasizing her mobility independence and ability to address barriers in her school environment independently. Consequently, through her efforts and the university's support, she navigated the campus independently. Most importantly, Q leveraged technology as often as possible to facilitate her mobility independence, in accordance with her own goals, and requested available human resources simply as necessary.

Q found that her graduate campus's interior buildings and roads were clearly marked on the mobile map. This attribute made her adjustment to the campus environment smooth:

"My mom spent a few days with me at school. At first, I planned to get a bunch of stickers, asked my mom to go with me and put up all stickers in places where I would go

frequently. Later, I found out that the campus map and buildings were very clear on the mobile GPS. I asked my mom to follow me. I took the phone to navigate, activated Gogo city function on the app, listened to the phone announcing the surrounding buildings, and then double checked with my mom. That's it!"

However, there were still accuracy issues with GPS navigation. Therefore, after her mother left, Q still requested volunteer support to accompany her as she familiarized herself with her campus environment. Luckily, it took much less time for her to become familiar with the environment. In addition, due to the disconnected and poorly paved tactile paths on campus and the limited accuracy of the navigation app, it took Q extra time to find the entrance once she approached the building. Her more significant concern, however, is her use of a navigation app developed specifically for the visually impaired that relies on outdated data and could face service suspension any day. This threat could curb Q's mobility independence; hence, she has been following discussions on social networks for college students with visual impairments.

***Campus Life***

To travel independently on and off campus, Q mainly relied on using a GPS and asking for help navigating. However, there were still some barriers to her campus life, the most prominent being dining. She faced the following three main dining issues:

The first obstacle pertained to reading the menu. The undergraduate school Q attended was small, so she could remember most of the dishes in the canteen; however, when she got to the graduate school, there were so many windows in the dining hall that she couldn't remember all the dishes. "I asked my classmates to read the menu at each window, recorded it on my phone, and converted it into a document with a speech-to-text software. I

could order by looking at the menu before dinner."

The second obstacle pertained to finding a seat, which is still difficult for her to do. During her undergraduate study, Q usually dined with her classmates with visual impairments and had little issues. Q requested the university to reserve a seat at her most frequented canteen before enrolling as a graduate student. Despite her efforts to communicate with the canteen, the canteen failed to secure her a seat. "One canteen owner is really nice and allowed me to post a sticker. However, the cleaning service kept removing the sticker the next day. On another occasion, the canteen may have been rearranging the dining tables and, therefore, moved my labeled table to somewhere else." This problem has not been fundamentally solved, and as such, Q's ability to independently navigate the canteen relies on the will of others: "It really depends. This one canteen, every time I go, a staff member will take me to my seat. But this might not be the case in a different place."

> The third obstacle is that accessibility issues have been ignored when the university implements technological improvements, resulting in greater accessibility barriers: We cannot use the self-service machine to recharge the campus card, and there is no manual window. Every time, I have to ask someone for help.… During my undergraduate years, I could take a shower by swiping my card in the dormitory. When I swiped my card, water started flowing, and when I swiped it again, the water would stop. Later, when the school introduced payment methods such as QR code scanning and Apple Pay, I couldn't shower in the dorm anymore. This is also true with the boiled water machine. I have to stop getting water by clicking on my phone. I still have a little vision, and every time I want to stop fetching water, I have to scramble to find the button on my phone that stops the flow of the boiling water. The totally blind students cannot get boiled water at all, and I have to help them.

***Academic Achievements***

Due to the limitation in accessing appropriate support services, Q decided to make choices for her learning and focus on what mattered the most to her. Her ability to use technology for problem-solving helped promote her independence and participation, but it also indicated the gap in the support system to be addressed. Q dreamed of becoming a Chinese teacher when she was a child. However, as she was applying to college, she could not take the general college entrance examination because her file was removed, making it impossible for her to register:

> I actually called to double check if my file would be removed earlier, and the reply was no. So I took the Dankao Danzhao first to secure a college admission. But my file was removed just before the general college entrance examination happened, and I couldn't even print my registration pass. In the end, I wasn't able to take the examination. This hit me so hard because I worked very hard and didn't even get a chance to prove myself.

Although Q did not like her current major in her college, she still expected to get a higher-level degree and realize her dream of becoming a teacher. Therefore, she studied diligently and had been preparing for the postgraduate entrance exam since her junior year. In the process of achieving academic achievement, she encountered the following barriers:

**Production of Accessible Learning Materials**

Currently, no appropriate mechanism exists to provide accessible learning materials for students with visual impairments in China. Although Q's undergraduate university built a reading room for the visually impaired, it did not initially provide them with suitable learning

materials. “The last batch of students with visual impairments did not have accessible textbooks and learning materials, and they had to rely on teachers’ PPT materials to study.” Later, due to the assessment and training partnership with One Plus One, the staff in the reading room for the visually impaired learned that the Golden Cane Pre-College Program was producing accessible electronic textbooks for college students with visual impairments in many regions. Through learning from One Plus One, the staff began to organize volunteers on campus to provide accessible textbooks for Q’s class in the same way. “They set up a volunteer club (I think it was called the Aurora Club) to produce electronic learning materials for us. By the time we got the textbooks, however, it was the end of the semester.” During her graduate studies, Q communicated with the university in advance and got a promise from the library that it would produce accessible textbooks for her. “But I didn’t ask them to do it much mainly because it was too slow. I couldn’t wait to read these textbooks, and I just couldn’t wait.”

> After years of practice, Q learned an effective method of obtaining textbooks:
>
> First, look for textbooks online. Online textbooks are comprehensive and can be found directly in electronic form. If they are unavailable online, I pay for PDF versions through some channels that look for books on behalf of others. It seems that they also look for such books in various online libraries. If they still can’t find it, I’ll buy such books, and then use the CamScanner app on my phone to scan, which can also directly identify text basically without errors. At home, I asked my younger brother to acquire books for me. We used a scanning cloth to hold the book in place and scan, which was pretty fast.

Textbooks with graphics and formulas, on the other hand, cannot be recognized with software or read aloud in a linear fashion. In this case, Q would ask her mom for help. “I

normally record on the computer the page number; then, when I get home, I say to my mom: "Mom, read the lines and pages!"" Based on this experience, Q was able to read many materials in preparation for her graduate school entrance exams.

**Classroom Learning and Sharing**

At present, college teaching has been largely electronic, and teachers prepare PPTs during lectures, which is convenient for students with visual impairments. However, because it is difficult to simultaneously listen to lectures and the sound of reading PPT by the Voice Reader on the computer, Q usually requests the teacher to send the PPT to her in advance so that she can familiarize herself with the content and progress. "Teachers in her program are generally willing to share PPTs with all students, but they don't make the format of the PPT accessible. For example, it is impossible for me to read screenshots and formulas, and the machine recognition results are poor." In addition to the accessibility issues of the PPTs, the teaching habits related to visual capacity can also cause problems during the presentation. "I've reminded them, but they often forget, and still say to students, "please look at this or that." I have no idea what the teacher is referring to." In Q's opinion, however, her interaction with teachers and classmates can still overcome these nuisances. "I don't really feel comfortable about bringing them up all the time. If it's important, I'll ask about it in private." However, when she audits the courses of other departments, Q would feel more comfortable asking the teacher for the PPT. Sometimes, if she communicates with the teacher, the teacher asks other students to share electronic files of course material with Q.

Student sharing is a vital engagement process in both undergraduate and graduate classes. To prepare her for sharing in class, Q may ask her classmates for help with the design of her PPT to enhance its visual effect. "I draft the content into a document and then ask my

classmates to design the PPT. There is no need to make the PPT very beautiful. I just ask them to help with the template. After all, it would be difficult for me to do it anyway. My teacher set up a volunteer group for me, so that I can get assistance when I share such needs in the group." Q may face challenges, however, when using the PPT for her presentation. "Actually, I was curious about how I could control the PPT by myself while looking at my notes and introduce the content to the group. Usually, I can only listen to the document by myself, and then ask my classmates to help me switch the PPT slides."

**Tests**

Testing at the higher education level is flexible, and teachers have greater power to decide how to do it. Therefore, it is less difficult to make testing accessible, such as through electronic test papers and computer-based answering with a braille dot reader. Her undergraduate university has purchased braille computers, braille dots, braille printers, and other devices. Her graduate school initiated collaboration with the China Braille Press to rent braille computers and small braille printers for her daily use, but they were used infrequently.

For Q, the barriers come from two main sources: firstly, quantitative research courses that require the operation of SPSS software – which is not accessible – on a computer. During her undergraduate period, the teacher would ask students to finish the test at home by operating the software independently and then submitting the results. Consequently, Q completed the test with the help of classmates. "I asked my classmates to do it for me. Our teacher didn't really care about the process. The software didn't support accessibility anyway. So the teacher had to allow me to finish the test this way." This way of completing the exam also influenced Q's attitude towards the course: "I probably won't be doing much quantitative research in the future, so I just need to know the concepts." The second barrier comes from the national examinations, such as the CET-4, CET-6 and teacher qualification certificate

examinations. To apply for reasonable accommodations for these exams, Q is required to communicate with the relevant examination authorities. There are already braille papers and large-print papers for CET-4 and CET-6. As for the teacher qualification certificate examination, only some cities have opened pilot programs for persons with visual impairments.

**Extracurricular Learning**

Q has high expectations for her study and plans her extracurricular schedule well. Her undergraduate school set up a special reading room for students with visual impairments, so it was easy for her to find seats to study. During her graduate studies, she communicated with the university and requested a special seat in the library. However, she needed to study with a computer and hoped to protect her ears, so she tried to minimize her use of headphones. Aware that the computer loudspeaker could disturb other students, she applied to learn in a separate study room. “That room was originally a small activity classroom. Only my card could be swiped to open this activity classroom. I studied alone in this classroom. To take breaks, I also prepared a quilt and a pillow.”

***Full Inclusion in Extracurricular life and Activities***

Q’s participation in extracurricular life and activities revealed the limitations of technology and a much deeper problem – attitudinal barriers. Unlike segregated blind schools, there many extracurricular possibilities on campus, including auditing other schools’ courses, attending various academic lectures, participating in student associations, and applying for teaching assistant and research assistant positions. Students must also participate in internships in their junior and senior years and during their second year of graduate school. Here, Q faces three main barriers: information access, activity participation, and

interrelationship with others.

**Information Access**

Information access posed the biggest challenge for the equal participation of people with visual impairments. Based on her rich experience with computers and smartphones, Q has a variety of solutions to deal with the challenge. “The biggest problem is the verification code issue while logging on the school website. I communicated with the university about this. They replied that it was difficult to add a voice verification code, but there used to be a way to scan WeChat QR code to log in, and they could add the feature back to me. That hasn’t been done yet. But that's okay, I just ask my classmate to read it for now.” Because of the complexity of the university faculties and clubs, Q is challenged to get information from multiple sources. “There’s not much content on the university website. Each faculty, department, or club has its own WeChat official account. There are so many official accounts we need to follow.”

**Activity Participation**

Due to the university’s openness, Q is free to sit in on classes in other departments. However, when it comes to signing up for clubs or seeking internships, Q still encounters barriers. “Most recruiters don’t know how to deal with me, I guess. I once signed up for a psychology club but got turned down on the grounds that the people in charge said that the courses involved drawing pictures a lot and said that I wouldn’t fit.” In Q’s opinion, the main problem is still the inadequate awareness of disability equality and inclusion among students. As a result, the typical reaction is still rejection rather than providing reasonable accommodations to people with visual impairments to participate equally. The same is true in finding internship positions. “We did our internships in positions offered by the

undergraduate university, because the university didn't provide a suitable co-op program. Later, I learned to seek opportunities online, such as Boss Zhipin. The job openings were all pretty interesting."

**Interrelationship with Others**

In addition to the aforementioned needs, Q also encountered other barriers in campus life. The biggest barrier is the development of social relationships. On one hand, Q did not consider herself a social person. On the other hand, Q also felt the distance between persons with and without visual impairments. "I feel like I'm not in the same world as everyone else. Especially when everyone likes to share expressions and emoji while chatting, I can't join them at all. I was often forgotten during club activities." Q had classmates with visual impairments at the undergraduate level, and they formed a group for the visually impaired in the class; however, during her postgraduate studies, there has been only one student with visual impairment in the university. As a minority, she did face interpersonal troubles. Some researchers have noted that "students with visual impairments in colleges and universities have a strong connection and strong mutual support for each other," but that "this strong connection pattern of high intimacy affects their campus integration with college students without disabilities and, indirectly, their social inclusion" (Yuan, 2019).

However, there is a possibility of reverse causation in this relation. It seems that the tight connection of students with disabilities among themselves is a passive connection due to challenges in interpersonal relations development in the process of being included in campus life revealed in Q's case. Therefore, Q believes that the important thing is not to provide psychological support or interpersonal skills intervention but to have broader disability awareness training on campus to promote an inclusive and accepting environment. Q hopes that the Golden Cane may play the role of providing professional training for this purpose.

Nevertheless, from the authors' practice and experience, there are also barriers for the university to promote disability consciousness training at a holistic level. Moreover, in Chinese culture, it still takes effort to raise awareness and understanding of disability rights.

## Results and Recommendations

In the context of inclusive education, constructing a support system for college students with disabilities from a macro perspective has received extensive attention. Discussion topics cover comparative studies of the international experience and local practice. The former includes, for example, the perspective of "the support system of higher inclusive education for college students with disabilities in the United Kingdom and its inspiration," from which the researchers propose that "China can build an inclusive higher education support system of values, regulations and policies, teaching practices and accessibility construction to create an inclusive campus" (Pang, 2020). Conversely, the latter suggests that "China should support college students with disabilities to complete their studies by establishing a leadership department, setting up a counseling center, and developing policies" (Ma, 2012).

However, Q's experiences demonstrate the difficulty in coordinating and constructing support systems for students with disabilities. The fundamental issue underpinning this difficulty is the lack of understanding of inclusion and the lack of willingness of each stakeholder to promote inclusion. Raising awareness of disability rights and promoting understanding of disability is still largely regarded as charity work rather than a form of disability expertise. Consequently, the leading and professional role of organizations for persons with disabilities hasn't received sufficient recognition. Yet, as the number of students with disabilities entering general universities grows, the demand for change is even more

urgent. Given this, it is necessary to explore what strategies should be adopted to ensure the substantial equality and participation of students with disabilities and promote the development of support systems.

During her undergraduate and postgraduate studies, Q faced challenges related to independent living, academic achievement, extracurricular activities, internships, and interpersonal development. Her main problem-solving strategy is to use technology to remove obstacles and improve her own problem-solving skills, supplemented by seeking temporary help from people close to her. However, even when she seeks human help for a specific matter, she eventually turns it into an opportunity to use technology to tackle problems herself. This compromised choice is due to the extra burdens and reliability issues inherent in seeking human help. For example, the scanned materials might be delayed or incorrect; the human support might not be available and stable; and she also doesn't want to be considered as a troublemaker or incapable by requesting necessary help, a result of environmental marginalization and discrimination against persons with disabilities that also shape her decision-making process.

Compared to negotiating with people, in this situation, using technology by herself for problem-solving is a much easier endeavor. However, technology can only solve some of the problems. She still must seek help from others. Her list of human resources for help begins with those close to her, such as family members and people in close relationships. Her experience in college and graduate programs indicate that system support from the school is missing. There is random support she has to pursue at times. Compared to the coordinators and service providers her school sent, family members and close friends were more available and handier and also understood her needs better, hence offering more appropriate help.

Although she has not yet been able to participate and integrate into campus life fully,

she managed to have main academic achievements and life autonomy. This aspect fully demonstrates the low awareness of the capacities of persons with disabilities and of their rights to equal participation. This low awareness explains why her ability to realize full inclusion is undermined.

We do not intend detract from the direction of promoting inclusive higher education for persons with visual impairments to a technology-centered approach from removing social barriers and oppression by overemphasizing the importance of ICT to breaking down barriers. We also don't intend to undermine the significance of technology in its current conditions either. Neither technology nor human support should weaken or undermine the fundamental role of students with visual impairments as rights bearers. Behind their role play is the awareness raising of disability rights, enabling them to seek pragmatic support when structural support is missing effectively. Random choices are always limited. However, for students like Q to have full and equal participation, developing a support system through the active involvement of these students themselves is crucial. They should not be treated as passive receivers of support.

In conclusion, the authors present the following recommendations for promoting the development of higher inclusive education:

First, re-recognize the active role of college students with disabilities, raise awareness of their rights as rights holders through disability rights training, and prepare them to be stronger advocates of inclusion through active engagement in a school environment.

Second, improve the digital knowledge of college students with disabilities so that they are equipped with the ways of thinking, abilities, experiences, and methods necessary to use technology for problem-solving. This will enable them to solve practical problems and make good practices when they encounter temporary obstacles that are difficult to remove.

Third, establish a support network for college students with visual impairments so that their positive experiences can flow horizontally among their peers and be passed vertically between their predecessors and younger generations. Furthermore, this support network will ensure that students with visual impairments can get psychological support while solving practical problems.

Fourth, recognize the important role of disability organizations in promoting inclusive higher education, provide system support for them to play their professional and leadership role in disability support for students and university awareness enhancement, and develop regular partnerships with them for inclusive higher education.

## Conclusions

In 2017, Xiang Wei, a candidate from Gansu Province, wrote a letter to Tsinghua University, hoping he would be accepted and his mother could accompany him. At that time, Tsinghua University's reply – "*Life is hard, but please choose to believe"* – caused widespread, heated discussion on the Chinese Internet. Amid the praises, Cong Cai, wrote an article criticizing Tsinghua University for not responding to the accessibility needs of this student using a wheelchair from a systematic support perspective (Cai, 2017). From a macro perspective, this is an expression consistent with the idea advocated by disability organizations. It also implicitly criticizes the student for not requesting accommodations but rather indicating his willingness to address barriers himself. Given mounting difficulties in the system over the recent years and the persistent practical needs of students with disabilities in higher education, the authors recognize that Xiang Wei had written letters requesting to study at Tsinghua University accompanied by his mother to pursue equality in an environment full of obstacles. Meanwhile, Q faced slow responses from her university and

thus actively developed a set of strategies to handle accessible textbooks through the Internet and information technology.

Calls for inclusive higher education for disabled persons are not the focus of empty studies, nor do they garner external attention; hence, it is important to observe the experience of college students with disabilities. Students with disabilities are not objects that can and should wait to receive support but rather living testimonies of the power of inclusion in the development of higher inclusive education. They are not the objects rescued by technology, but rather subjects who actively choose to use and engage technology in a range of meaningful ways: in solving their problems, they also drive forward the process of inclusion at large. Only by recognizing these key points, allowing college students with disabilities to stand at the center of inclusive higher education in China, and providing support for their further awareness and self-empowerment can their value and significance be noticed – thereby laying the foundations for full, practical equality and inclusion.

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